

**CST – Construction Surveying  
and Site Management**

**T025**

wednesday, 05/11/2014  
08:30 - 11:30 AM

WORKFORCE DEVELOPMENT AUTHORITY



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**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2014  
TECHNICAL AND PROFESSIONAL TRADES**

**EXAM TITLE: Construction Surveying and Site Management**

**OPTION: Construction (CST)**

**DURATION: 3hours**

**INSTRUCTIONS:**

The paper consists of **three (3) Sections :**

Section I: Ten **(10)** questions, all **Compulsory.** **55marks**

Section II: Five **(5)** questions, **Choose any Three (3).** **30marks**

Section III: Three **(3)** questions, **Choose any One (1).** **15marks**

## SECTION I. TEN (10) COMPULSORY QUESTIONS.

01. A plot of land measures 50cm x 90cm on a map drawn to scale 1cm = 75m. What will be the area of the map when placed on a topographical map drawn to a scale of 1cm = 110m? **5marks**
02. A surveyor, 150m from a building, measures the angle of elevation to the top of a building to be  $40^\circ$ . If the height of the instrument is 2.100m and the ground between the surveyor and the building is level, find the height of the building. Represent the situation by clear drawing. **8marks**
03. Mirimo, standing on the 8th floor of his building, looks at his car parked on the nearby road.
- a) Detail the situation on a figure with 15m opposite side and 45m adjacent side. **5marks**
- b) Find the angle of depression. **5marks**
04. The gradient of a road is 1 in 10. Find the angle that the road makes with the horizontal. Represent the situation by sketch. **5marks**
05. List eight (8) facilities and services that should be available in a well-managed construction site. **8marks**
06. How does a chain survey differ from a traverse survey? **3marks**
07. Express the objective of surveying **3marks**
08. When a chain angle can be fixed by taking three measurements at the traverse station, do you think that there is any necessity for the computation of the trigonometric functions of the chain angle? **3marks**
09. Explain: "construction worksite organization". **5marks**
10. The back sight and fore sight at points A and B are 4.182m and 3.320m respectively. Find the difference of level between A and B. **5marks**



**SECTION II. ATTEMPT ANY THREE (3) QUESTIONS.**

11. Discuss the functions of a Quantity surveyor

**10marks**

12. The drawing provided on Plate (A) is a floor plan of a simple residential building. Study it carefully and answer the following questions.

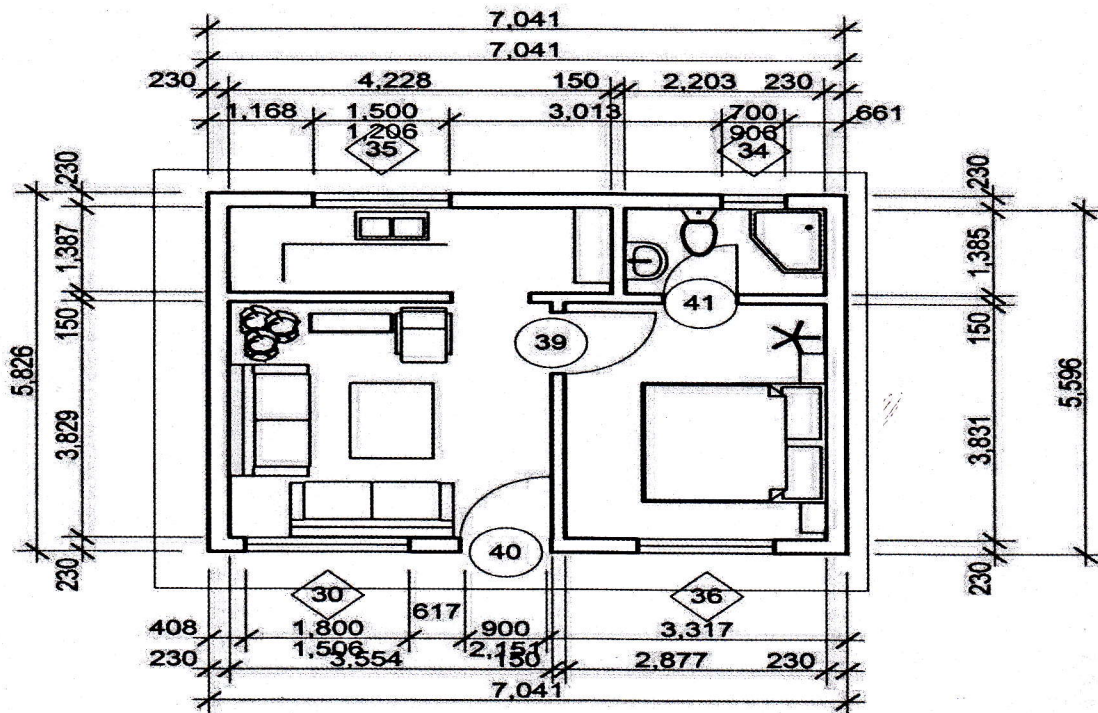
Calculate :

a. The mean girth of external walls.

**5marks**

b. The area of internal walls if door labeled 39 is 900 x 2100mm high and door 41 is 800 x 2100mm high and the overall height of the walls from structural floor level is 3000mm.

**5marks**



**Fig: Plate (A)**

13. A flat roof of 5m span has a fall of 150mm; find the pitch of the roof. Draw a respective figure of the above description to make clear your calculations. **10marks**

14. A chain was tested before starting a survey and was found to be exactly 36m. At the end of the survey it was tested again and was found to measure 36m and 30cm. The area of the plan drawn to scale 12m to 1 cm was 270cm<sup>2</sup>. Find the true area of the field. **10marks**

15. The length of a chain line when measured with a 25m chain was found to be 1341m. But a 31m chain, which had one link missing between 25m and 30m was used, the line was found to be 1345m long. What was the error in 25m chain?

**10marks**

**SECTION III. ATTEMPT ANY ONE (1) QUESTION.**

16. Write short notes on the following terms commonly used in quantity surveying

a) Provisional sums

**3marks**

b) Preliminaries

**4marks**

c) Prime Cost sums

**3marks**

d) Preamble

**5marks**

17. a) Explain the stepwise procedure for the temporary adjustment of a Theodolite.

**6marks**

b) Explain the term leveling and its necessity.

**4marks**

c) A building site has two roads at right angles to each other, each forming a boundary to the site. If the boundaries are 45m and 53m long and the site is triangular what is the length of the third boundary?

**5marks**

18. a) Highlight the role of a quantity surveyor during preparation of tenders.

**6marks**

b) Identify the three types of certificates that an architect can issue as approval for payment to the general contractor

**6marks**

c) Find the vertical rise for a road whose gradient is 12% and 6450m length.

**3marks**